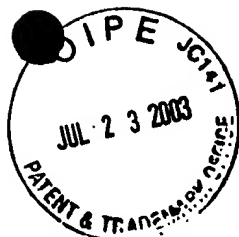


18 July 03

Docket No.: 2328-023RI



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

DUANE C. GATES

U.S. Patent Application No. 09/534,814

Filed: March 22, 2000

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Group Art Unit: 3742

Examiner: PASCHALL, Marc

For: SEGMENTED COIL FOR GENERATING PLASMA IN PLASMA PROCESSING
EQUIPMENT

RECEIVED

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

JUL 24 2003
TECHNOLOGY CENTER R3700

DECLARATION OF ROGER PATRICK

I, ROGER PATRICK, hereby declare as follows:

1. I have been extensively involved in vacuum plasma processor technology since 1984. I am the inventor of patents concerned with coils for exciting plasmas in plasma processors, for example US Patents 5,401,350 and 5,578,165. In addition to being a knowledgeable inventor of many aspects of vacuum plasma processors, I have, since 1986, supervised many people in the field. As a result of the interaction I have had with those in the field, including the supervision I have performed, I am familiar with the level of ordinary skill in the art of those who were working in the plasma processing technology field in 1994. This is particularly true about those who worked on plasma processor coils in 1994, which is about the time I was involved in developing coils of the types disclosed in the '350 and '165 patents.
2. I am currently employed in the plasma processor field by Lam Research Corporation, of Fremont California, the assignee of referenced application. I received a B.A. degree in chemistry and a D.Phil., in physical chemistry from Oxford University, Oxford, England.

DECLARATION OF ROGER PATRICK

3. In my opinion, those of ordinary skill in the art in 1994 would have known: (1) the interior portion of the coil illustrated in Figure 4 or 5, inside of circle B of exhibit A, produces magnetic flux having greater density than is produced by the intermediate portion of the coil between the circles A and B of figures 4 and 5 of exhibit A if switch S1 of figure 4 is open and switch S2 of figure 5 is connected to the outer terminal of coil portion 52; (2) the exterior portion of the coil of Figure 4 or 5 beyond circle A produces magnetic flux having greater density than the intermediate portion under the described conditions; (3) the amount of magnetic flux produced by a particular coil arrangement is directly related to the number of turns of the coil arrangement and the amount of current flowing through the coil; (4) when the coils of Figures 4 and 5 are connected as described, the interior, intermediate and exterior portions of the coils are connected in series so that the current which flows from a terminal at the interior of the coil to a terminal at the exterior of the coil has only one path; (5) there might be transmission line effects due to the lengths of the coils between the interior and exterior terminals thereof relative to the wavelength of the RF source; (6) the transmission line effects might cause the current in different parts of the coil to be slightly different from each other; (7) the transmission line effect is not sufficiently great to cause the magnetic flux density in the intermediate portion of the coil to exceed the magnetic flux density in the interior and exterior coil portions; (8) the interior and peripheral portions of the coils of Figures 4 and 5, when connected as previously stated, include plural radially and circumferentially extending turns; (9) the intermediate portion of the coils of Figures 4 and 5, between the interior and peripheral portions thereof, does not include a complete turn and includes a lead having a straight portion; (10) the coils couple RF fields to the plasma; and (11) the coils produce RF magnetic fields, as well as RF electric fields that are coupled from one portion of the coil into the plasma and back to another portion of the coil. My foregoing conclusions are because those of ordinary skill in the art would have learned these basic principles of (3), (4), (5), (6), (8), (9), (10), and (11) in school or other experiences and would have reached the conclusions of (1), (2) and (7) from the principles of (3), (4), (5) and (6).

DECLARATION OF ROGER PATRICK

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine, or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

DATED this 22 day of July, 2003, at Fremont, California



ROGER PATRICK

Submitted by:

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DECLARATION OF ROGER PATRICK

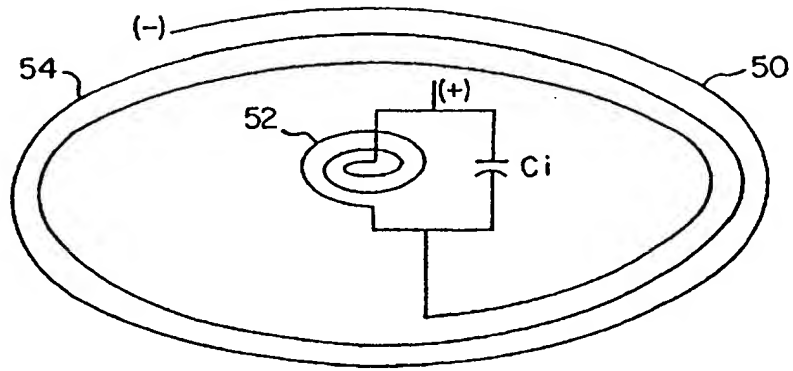


Figure 3

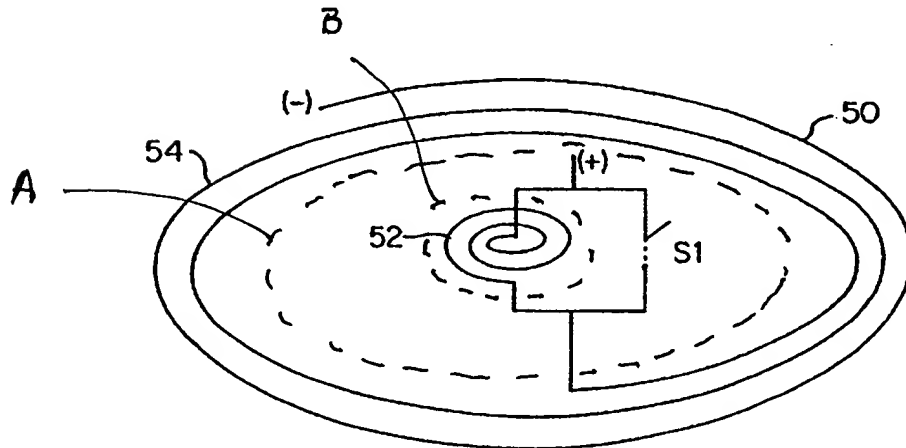


Figure 4

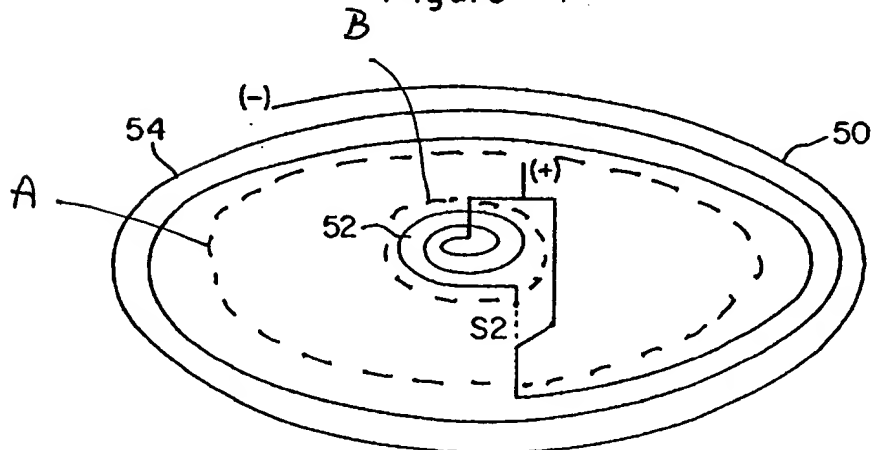


Figure 5

EXHIBIT A

Declaration of Roger Patrick
Serial No.: 09/534,814
Examiner PASCHALL